NOSB Apiculture Task Force Report
Draft Organic Apiculture Standards
Compiled by James A. Riddle, ATF Chair
September 15, 2001

I. Introduction:

The NOSB Apiculture Task Force was charged with development of organic apiculture standards. In the opinion of the Task Force, organic producers may introduce and manage bees on their operations for production benefits, such as the pollination of organic crops. If managed as a livestock species that yields organic apiculture products such as honey, pollen, propolis, royal jelly, beeswax, and bee venom, beekeepers must manage bees in compliance with organic standards.

The draft organic apiculture standard establishes allowed and prohibited production practices for organic apiculture operations based on the requirements of the Organic Foods Production Act (OFPA). It is consistent with the National Organic Program Final Rule, published December 21, 2000, and cross-references applicable sections of the rule.

The OFPA livestock certification requirements include provisions for the origin of livestock, the feed ration, living conditions, health care management practices, and the record keeping arrangements necessary for identification and audit trail purposes. All livestock certification requirements of OFPA are addressed in the draft organic apiculture standard.

II. Organic Apiculture Standard:

§ 205.2 Definitions.

> Apiculture. The management and production of honey bees and queens and their products including but not limited to honey, beeswax, pollen, royal jelly, propolis, and bee venom.
>
> Forage zone. Land surrounding bee colonies which provides bees with water, nectar, honeydew, pollen, and propolis.

§ 205.240 Apiculture practice standard.

(a) [task force note: it is important to specify what time of year the 270 day period occurs. Often during winter at northern lattitudes some boxes of a hive may not be occupied by bees and therefore not cleaned of added prohibited material for several months. In any case please note that hive cleaning activity changes from vigorous during and around nectar flow periods to greatly limited during winter.] Products from an apiculture operation that are to be sold, labeled, or represented as organic must be from hives which have been under continuous organic management for no less than 270 days prior to the removal of the products from the hive. If a prohibited material has been used in or on the hive prior to the 270 day transition, [task force note: I suppose the intent here is to require replacement of potentially contaminated wooden

Deleted: the producer must replace the hive's foundation

ware and wax which should correctly be refered to as “comb” or “frames of comb”.] the producer must remove the bees from the hive and shake the bees into another hive consisting of new hive boxes and frames fitted with foundation and/or boxes and frames of comb from organically managed sources.

(b) A producer of organic apiculture products must develop an organic apiculture plan in accordance with the provisions in § 205.201 with special attention to pest and disease (varroa and tracheal mites, AFB) prevention and management. In addition, the organic apiculture plan must:

(1) Contain a map of the forage zone which shows the location of the hives, the location of organic and wild land, and the location of all non-organic areas;

(2) Describe the quantity of organic and/or wild forage to be provided per colony, including the type or types of forage, approximate bloom period, forage density, competing species density, honeybee colony density, colony health, colony strength, topography, and climatic conditions;

(3) Describe the water sources available in the forage zone;

(4) List all sanitary landfills, incinerators, sewage treatment facilities, power plants, golf courses, towns or cities, land to which prohibited materials are applied, and all other sources of potential contamination located in the forage zone; and

(5) For split operations, list and describe the management practices used to prevent commingling and contamination, including measures to prevent commingling resulting from bee drift and robbing.

(c) A producer of organic apiculture products must maintain records in accordance with § 205.103 and § 205.236(c).

(d) The producer must maintain hives on land that is managed in accordance with the provisions in § 205.202 through 205.206 or § 205.207.

(e) The producer must provide bees with forage that is managed in accordance with the provisions in § 205.202 through 205.206 or § 205.207.

(f) The producer of an organic apiculture operation may:

(1) Allow bees from their operation to forage on non-organically managed land when adequate forage from organically managed land and/or land that is managed in accordance with § 205.207, as defined by the operation’s organic apiculture plan, has been provided; and

(2) Provide supplemental feed from organic honey, organic sugar syrup, and/or pollen substitutes and supplements that are allowed under 205.603, *Except*, That, the producer must not provide organic sugar syrup less than 30 days prior [task force note: I suggest revising upward of 30 days. Depending on time of year and colony size or health, food stores often remain in hive longer than 30 days. Also provisions should be made for what to do with the stores if shortly after fall feeding a colony crashes (death from Parasitic Mite Syndrome). In that case I suggest feeding the stores, which may likely contain sugar, to other colonies and not allowing harvest as organic.] to the harvest of honey to be sold, labeled, or represented as organic.

(g) The producer of an organic apiculture operation must not:

(1) Maintain colonies in an area where land to which prohibited materials, as listed in § 205.105, are applied, or where another source of contamination is located less than 4 miles (6.4 kilometers) from the apiary, as described in the operation's organic apiculture plan.

(h) Approved hive construction materials.

(1) Hives must be made of natural materials, including wood and metal.

(2) Outside hive surfaces may be painted with non-lead based paints, stains, vegetable oils as follows: bees and frames of comb must be removed; all painting is done outside

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the bee yard; painted surfaces are thoroughly dried and aired out [task force note: I suggest more than 10 days of warm drying] before returning painted boxes to the bee yard.]

(3) Plastic foundation may be used if dipped in organic beeswax and mounted in a wooden frame.

(4) Foundation wax, use organic when available. [task force note: compare with organic seed sourcing required of horticulturists]

(i) The producer must establish and maintain preventive health care practices, including:

(1) Selection of bee stocks, hive densities, and colony locations appropriate to local conditions and resistant to prevalent diseases and pests;

(2) Introduction to organic hives of replacement bees which are from organic sources or from non-organic sources, *Provided*, That the replacement bees are managed organically for at least 60 days prior to the harvest of organic apiculture products from the hive;

(3) Maintenance of adequate supplies of honey and pollen in the hive, including leaving hives with reserves of honey and pollen sufficient for the colony to survive the dearth period [note to task force: "dormancy" is not a term correctly used when referring to apis mellifera, apiculturists might refer instead to an annual period of low or no forage or "dearth";

(4) Use of comb not contaminated with diseases or pests, replacing the oldest black brood comb as studies show this can harbor disease;

(5) Destruction or , thorough scorching of equipment and destruction of bees contaminated with American Foul Brood. Scorching of wooden equipment and or replacement of comb to mitigate re-infection pressure from Nosema and other diseases, [to save livestock in the case of A.F.B. the task forced might consider also allowing the following operation: carefully shaking just the bees onto new foundation and feeding syrup]

(6) Use of management methods or modified equipment to monitor and control pests and diseases;

(7) Use of therapeutic applications of non-synthetic materials to control pests, parasites, and diseases, *Provided*, That such materials are not prohibited under § 205.604; and

(8) Use of therapeutic applications of synthetic materials, *Provided*, That such materials are allowed under § 205.603.

(j) The producer must not:

(1) Accept the presence of pests, parasites, or disease without initiating efforts to restore the health of the colony;

(2) Use synthetic materials not listed as allowed under § 205.603;

(3) Use non-synthetic materials prohibited under § 205.604;

(4) Use lumber treated with synthetic materials not listed as allowed under § 205.603 or non-synthetic materials prohibited under § 205.604 for hive construction materials;

(5) Use synthetic materials or non-synthetic materials prohibited under § 205.604 in bee smokers;

(6) Annually destroy bee colonies;

(7) Rotate hives between organic and non-organic management; or

(8) Sell apiculture products as organic if they contain a residue of a prohibited material greater than 5 percent of the Environmental Protection Agency's tolerance for the specific material, pursuant to § 205.671.

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Comment [LSC1]: Parallel grammatical construction.

Deleted: dormancy

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III. Amendments to the National List:

The NOSB Apiculture Task Force gathered information on materials currently used by apiculture

operations and materials currently allowed by certifying agents. The Task Force proposes that the following materials be reviewed for possible inclusion on the National List, § 205.603.

The Task Force is not endorsing any of the materials listed below, and is not recommending the approval of any particular material listed. We recommend that the materials listed be reviewed on a high priority basis, due to the fact that many of the materials are currently being used by organic apiculture operations. Without a clear list of allowed apiculture materials, it will be impossible for the apiculture standard to be implemented.

The Task Force recommends that new subsections be created in § 205.603 and § 205.604 to specifically list synthetic substances allowed for use by organic apiculture operations and non-synthetic substances prohibited for use.

The current materials review process requires that a petition be submitted for each material being requested for review. The Task Force recommends that the NOSB submit the materials listed below for review, and direct the NOP to prioritize their review. The Task Force points out that a similar “blanket” list process was used when crop and handling standards were first developed. The Task Force further points out that this situation will occur when standards are written for any new sector of the organic industry. Procedures to address the review of materials for new sectors should be developed by the NOSB Materials Committee.

In the table below, the name of the material appears in the first column. The S/N code in the second column stands for synthetic/natural. The third column contains information and notes on how and why the material is used. The information in this column may be helpful to construct annotations on use of the material.

Acetic acid	**S**	For apicultural use to disinfect empty combs which have been exposed to European foulbrood, Nosema, or the protozoan-caused Amoeba Disease.
Carbon dioxide	**S**	For apicultural use to control wax moth.
Essential oils	**N**	For apicultural use to control tracheal mites including: menthol, cinnamon, eucalyptus, spearmint, wintergreen, thyme, and camphor. These materials may be used after the last honey harvest of the season and must be discontinued 30 days before the addition of honey supers.
Folic acid	**S**	For apicultural use to control Varroa mites. This material may be used after the last honey harvest of the season and must be discontinued 30 days before the addition of honey supers.
Formic acid	**S**	For apicultural use to control Varroa mites.
Lactic acid	**N** **S**	For apicultural use to control Varroa mites. This material may be used after the last honey harvest of the season and must be discontinued 30 days before the addition of honey supers.
Oxytetracyline (Terramycin)	**S**	For apicultural use. Only for treatment of American foulbrood (AFB) in apiaries in which the disease has been diagnosed; beekeepers may not make routine, prophylactic applications of oxytetracyline in apiaries in which there has been no confirmation of the presence of AFB. *(Note: Included for discussion purposes because oxytetracycline calcium complex is on the National List for crop production. Although terramycin is commonly used to control bee diseases, no antibiotics are allowed for other types of organic livestock. If allowed, an extended withdrawal period or re-transition of the hive should be considered prior to collection of organic apiculture products.)*
Vegetable shortening	**N**	For apicultural use to control tracheal mites. This material may be used after the last honey harvest of the season and must be discontinued 30 days before the addition of honey supers. *(Note: Some certifiers have allowed vegetable shortening mixed with sugar to form a patty. It is included here for review, but may not need to appear on the list, since it is a natural material, and may be used by definition. Since it ends up being eaten by the bees, it is assumed that the shortening would have to be from organic sources. If the shortening is used as an excipient, the Task Force is unclear as to whether the shortening must be organic or if it must appear on the list.)*

IV. Handling Standards for Organic Apiculture Products:

The Task Force had extensive discussion on the topic of apiculture handling standards without reaching a resolution. Recognizing the complexity this topic, and our desire to move the standards forward, we recommend that, for the present time, the standards deal only with production of apiculture products.

The Task Force recommends that the NOSB Processing Committee address the issue of organic "raw" honey vs. organic processed honey as the Committee develops standards and/or criteria for allowed processing technologies.

Attached as Addendum I are "Definitions of Honey and Honey Products" approved by the National Honey Board June 15, 1996. The Task Force refers the list of definitions to the

Processing Committee.

The Task Force recommends that the draft language contained below be referred to the Processing Committee for further consideration. Most of the requirements below are already covered by the handling section of the rule, and were deemed by the Task Force to be redundant. The Task Force recommends that the Processing Committee use the language below to develop a recommendation for standards which are unique to the handling of organic apiculture products.

§ 205.273 Handling organic apiculture products.

(a) A handler of organic apiculture products must develop an organic handling plan in accordance with the provisions in § 205.201.
(b) A handler of organic apiculture products must maintain records in accordance with § 205.103.
(c) An operation which handles organic apiculture products must implement Good Manufacturing Practices and be in compliance with all handling requirements of § 205.270 through § 205.272.
(d) Primary handlers of organic apiculture products must not:

(1) Add water to honey to decrease the honey's viscosity;
(2) Use fine mesh filters[1] or diatomaceous earth to separate seed crystals from honey;
(3) Use high pressure honey filtration;
(4) Heat or handle organic apiculture products using kerosene heaters or any heating system which introduces petroleum fumes into the room; or
(5) Control stray bees or other insects using synthetic insecticides, repellants, or fumigants, unless such materials are allowed under § 205.605.

V. Acknowledgements:

Members of the NOSB Apiculture Task Force were Kim Burton, NOSB, Dave Carter, NOSB, Lynn Coody, Organic Agsystems, Harriet Behar, Independent Organic Inspectors Association, Doug McGinnis, Tropical Blossom Honey, Mike Ingalls, Pure Foods, Inc., and Garnett Puett, organic beekeeper. Thank you.

Advisors to the Task Force were Dr. Joerg Schmidt-Bailey, U of IL, Dr. Eric Mussen, UC-Davis, Dr. Michael Burgett, Oregon State, Dr. Malcolm Sanford, U of FL, Dr. Tanya Pankiw, Texas A&M, Gene Brandi, National Honey Board, Arthur Harvey, beekeeper, Dan Weaver, beekeeper, W.C. Blaiklock, MOFGA, and John and Merrill Clark, Roseland Organic Farm. Thank you.

The Task Force was ably assisted by Mark Keating of the USDA's National Organic Program.

Respectfully Submitted,

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Chair, NOSB Apiculture Task Force

[1] How "fine" is fine? Suggestion to insert "no smaller than 1/132 inch, .2mm, or 200 microns". These dimensions exceed by a factor of three the diameter of the largest pollen grain, and are the limits commonly used in other organic standards, according to members the Task Force.

Addendum I: Definition of Honey and Honey Products

Approved by the National Honey Board June 15, 1996

PART A: HONEY

I. Definition

Honey is the substance made when the nectar and sweet deposits from plants are gathered, modified and stored in the honeycomb by honey bees.

The definition of honey stipulates a pure product that does not allow for the addition of any other substance. This includes, but is not limited to, water or other sweeteners.

II. Typical Composition

As a natural product, the composition of honey is highly variable.

	Average	Range	Standard Deviation
Fructose/Glucose Ratio	1.23	0.76 - 1.86	0.126
Fructose, %	38.38	30.91 - 44.26	1.77
Glucose, %	30.31	22.89 - 40.75	3.04
Minerals (Ash), %	0.169	0.020 - 1.028	0.15
Moisture, %	17.2	13.4 - 22.9	1.46
Reducing Sugars, %	76.75	61.39 - 83.72	2.76
Sucrose, %	1.31	0.25 - 7.57	0.87
PH	3.91	3.42 - 6.10	---
Total Acidity, meq/kg.	29.12	8.68 - 59.49	10.33
True Protein, mg/100g.	168.6	57.7 - 567	70.9

References

F:G ratio, Fructose, Glucose, Sucrose: White, J. W. Jr.
Detection of Honey Adulteration by Carbohydrate Analysis, Jour. Assoc. Off. Anal. Chem. 63 (1) 11-18. 1980.

Reducing Sugars and pH: Calculated from data in White, J. W., Jr. et al.
Composition of American Honeys. Tech. Bull. 1261, Agricultural Research Service, U. S. Department of Agriculture, Washington, D.C. 1962.

Protein: White, J. W. Jr., and Rudyj, O. N.
The Protein Content of Honey. Jour. Apicul. Res., 17 (4) 234-238. 1978.
Moisture, Total Acidity, and Minerals: White, J. W., Jr. , et al.
Composition of American Honeys. Tech. Bull. 1261, Agricultural Research Service, U. S. Department of Agriculture, Washington D.C. 1962

III. Types of Honey

Comb honey: Honey presented in its original comb or portions thereof.

Extracted honey: Honey removed from the comb and presented in several forms, as defined in the United States Department of Agriculture Standards for Grades: (1) liquid, (2) crystallized or granulated, or (3) partially crystallized. This is commonly known, and referred throughout the document, as "honey."

IV. Designation of Honey Sources - the source of honey determines many of the attributes of honey, e.g., aroma, flavor, color and composition.

Floral: Indicates the primary flowers from which bees gathered nectar to produce the honey.

Non-Floral: Indicates primary sources other than flowers such as extra-floral nectaries and honeydew[2].

Geographic Origin: The name of an area of production (state, region) may be included, provided the honey has been produced entirely within that area. Blends containing honey of foreign origin must be labeled to indicate their origin(s), in accordance with the Code of Federal Regulations (CFR).

V. Forms of Honey

1. **Blended Honey**: A homogeneous mixture of two or more honeys differing in floral source, color, flavor, density or geographic origin.

2. **Churned Honey**: See whipped honey.

3. **Cremed Honey**: See whipped honey

4. **Crystallized Honey**: Honey in which part of the natural glucose content has spontaneously crystallized from solution as the monohydrate. Also called "Granulated Honey."

5. **Filtered Honey**: Honey processed by filtration to remove extraneous solids and pollen grains.

6. **Honey Fondant**: See whipped honey.

[2]Honeydew is a sweet deposit, excreted by sap sucking insects such as aphids or coccids (and perhaps secreted by fungi), found on the surfaces of vegetation.

7. **Organic Honey**: Honey produced, processed, and packaged in accordance with State and Federal regulations on honey and organic products, and certified by a State Department of Agriculture or an independent organic farming certification organization.

8. **Raw Honey**: Honey as it exists in the beehive or as obtained by extraction, settling or straining without adding heat.

8a. **Commercially Raw Honey**: Honey as obtained by minimum processing. This product is often labeled as raw honey.

Notes: 1) Storage or exposure to either ambient (environmental) or applied (deliberately added) heat influences the character of honey. 2) Enzymatic activity, antimicrobial properties, microbial quality, color and chemical composition are all influenced by heat and storage.[3] 3) There are an infinite number of time and temperature combinations that will affect the raw state of honey. 4) The definition of "minimum" processing can be set by purchasing standards.

9. **Spun® Honey**: See whipped honey.

10. **Strained Honey**: Honey which has been passed through a mesh material to remove particulate material (pieces of wax, propolis, other defects) without removing pollen.

11. **Whipped Honey**: Honey processed, by controlled crystallization, to a smooth spreadable consistency. Also called "Cremed Honey," "Spun® Honey," "Whipped Honey," "Churned Honey," "Candied Honey" or "Honey Fondant."

VI. Grading

Current U.S. Standards for Grades of Extracted Honey and Comb Honey (CFR Title 7, Part 52, sections 1391-1405) are herein incorporated by reference. The grading of extracted honey includes factors such as color, clarity, absence of defects, moisture, flavor and aroma.

VII. Methods of Analysis

The official methods of analysis for honey of the Association of Official Analytical Chemists International are herein incorporated by reference (AOAC 1995, 16th edition, section 44.4).

[3] White, J. W., Jr. 1992. Quality Evaluation of Honey: Role of HMF and Diastase Assays. Am. Bee Journal. 132 (11 & 12): 737-743, 792-794. Molan, P. C. 1992. The Antibacterial Activity of Honey. Bee World 73 (1 & 2): 5-29, 59-77.

PART B: HONEY PRODUCTS

Honey products do not meet the compositional criteria for honey; but are products consisting in whole or in part of honey.

Imitation or artificial honey is a mixture of sweeteners, colored and flavored to resemble honey. This product does not meet the definition of honey or honey products. As such, it is inappropriate to include the word honey on the label of such a product.

This is a partial and constantly growing list intended to standardize the vocabulary used in the honey trade.

1. **Deionized Honey**: A honey product where honey has been processed to remove selected ions.

2. **Deproteinized Honey**: A honey product from which protein has been removed, from the honey, by appropriate processing.

3. **Dried Honey**: Honey which has been dehydrated and in which edible drying aids and processing adjuncts may be included to facilitate processing and improve product stability. Dried honey comes in various particle sizes.

4. **Honey Extract**: Any product formed by removing selected components from honey. The nature of the component (flavor, color, etc.) determines the type of extract. See natural honey flavor.

5. **Honey Spread**: A variety of edible, extremely viscous honey products made from honey or creamed honey. Honey spread is sometimes blended with other ingredients (such as: fruits, nuts, flavors, spices or margarine but excluding refined sweeteners).

6. **Natural Honey Flavor**: A substance obtained (often by extraction) only from honey that contains the flavor constituents of honey.

7. **Ultrafiltered Honey**: Honey from which all materials not passing a specified submicron membrane pore size have been removed. Materials removed include most proteins, enzymes and polypeptides. Evaporation required in the processing may also remove some volatile flavor and aroma constituents.